

## **REMARKS**

### **1. Discussion of Amendments**

By way of the amendment instructions above, the pending claims have been amended for purpose of clarity and to change certain expressions therein to those more commensurate with U.S. practice (e.g., changing the preamble expression "characterized in that" to "wherein").

In addition, claim 1 has been amended so as to emphasize that (i) the catalysing compound comprises at most 6 wt.% of an ammonium salt (see page 3, lines 25-27), (ii) the formaldehyde-containing aminoplast resin has a  $F/(NH_2)_2$  ratio which is lower than or equal to 0.95 (see page 6, lines 6-8), and (iii) the adhesive composition has a pH in the range of 7 to 5.5 (see page 7, lines 2-4) and exhibits a formaldehyde potential when cured of lower than 8 mg/100g according to DIN NEN 120 (see page 8, lines 10-15).

Claim 14 has also been amended so as to be in independent format and includes all of the changes made to pending claim 1 with the exception of the  $F/(NH_2)_2$  ratio which is expressed as being lower than or equal to 1.2 (viz 0.95). (see page 8, lines 28-35).

Therefore, following entry of this amendment, claims 1-17 will remain pending herein for consideration.

### **2. Response to Restriction Requirement**

Applicants hereby affirm the election of Group I, including claims 1-8 drawn to an adhesive composition. The claims of Group II and III directed toward non-elected patentably distinct inventions have been retained in the application and have been further amended so as to be consistent with the elected claims and to preserve the applicants' rights to possible rejoinder.

### **3. Response to 35 USC §103(a) Rejection**

Claims 1-5 and 7-8 attracted a rejection under 35 USC §103(a) as allegedly unpatentable over either Ford et al '839 (WO 94/06839) or Ford et al '219 (USP 5,486,219) while Wagner (USP 4,282,135 has been combined with either one of Ford et al '839, Tinkelenberg et al (EP 0 107 260) or Ford et al '219 to reject separately claim 6 under the same statutory provision.<sup>1</sup> Finally, Claims 1-5 attracted a rejection under 35 USC §103(a) as allegedly being unpatentable over Tinkelenberg et al either alone or in combination with Ford et al '839. As will become evident from the following discussion, such rejections are suggested to be in error.

At the outset, applicants note that Ford et al '839 is the published European patent application equivalent to Ford et al '219 (i.e., since the former claims priority benefits from the parent application of the latter). For ease of reference therefore, the comments below will be directed generically toward "Ford et al" and citation to passages will be to Ford et al '219.

#### **(i). Response to Rejection based on Ford et al Alone**

Ford et al discloses coatable urea-aldehyde binder precursor compositions which include a urea-aldehyde resin and a cocatalyst system which includes a Lewis acid and a salt of e.g., ammonium ion salts and organic amine salts. Significantly, the adhesives of the type disclosed by Ford et al are intended for use as adhesives for coated abrasive products. Also, significant is that aldehyde/urea ratio is at least about 1.0, preferably from about 1.0 to about 2.0. (column 4, lines 43-46)

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<sup>1</sup> It is noted that the same rejection has apparently been advanced against claim 6 in paragraphs 9 and 16 of the Official Action. However, since reference is made in paragraph 17 to "Tinkelenberg et al", it will be assumed that the rejection stated in claim 16 should have referenced Tinkelenberg et al in view of Wagner.

By way of the amendment instructions above, independent claim 1 has been revised so as to emphasize that the  $F/(NH_2)_2$  ratio which is lower than or equal to 0.95. Moreover, claim 1 has been amended so as to emphasize that the adhesive composition exhibits a formaldehyde potential when cured of lower than 8 mg/100g according to DIN NEN 120. These factors clearly distinguish the present invention patentably over Ford et al.

While applicants acknowledge that Ford et al discloses that the aldehyde/urea ratio may be at least "about 1.0", the ordinarily skilled person would not be motivated to ratios below 1.0, specifically at 0.95 and below. In this regard, the Examiner is invited to study the data in the originally filed specification for Examples A and B (comparative) versus Example 3 on page 10. There it will be observed that the formaldehyde (F) potential (i.e., the so-called Perforator test according to DIN NEM 120 (see page 8, line 12) is unacceptably high for cured board products having a  $F/(NH_2)_2$  ratio of 1.1 whereas cured board products having a  $F/(NH_2)_2$  ratio of 0.9, specifically 11 and 18 mg/100g for Examples A and B versus 5 mg/100g for Example 3. This data unequivocally demonstrates that an ordinarily skilled person would not be led to below 1.0 for the  $F/(NH_2)_2$  ratio when it was desired to have an adhesive composition for board products which when cured has a formaldehyde potential of lower than 8 mg/100g according to DIN NEN 120.

Accordingly, none of the pending claims under examination herein would be obvious from Ford et al.

**(ii). Response to Rejection based on Ford et al and Wagner**

Wagner fails to cure the deficiencies of Ford et al as noted above. Specifically, while Wagner does in fact disclose that aminoplast resins may be catalyzed by formic acid and acetic acid, Wagner does not provide any motivation to the ordinarily skilled person to reduce the  $F/(NH_2)_2$  ratio to 0.95 and below when it was desired to have an

adhesive composition for board products which when cured has a formaldehyde potential of lower than 8 mg/100g according to DIN NEN 120.

Accordingly, the combination of Ford et al and Wagner et al is inappropriate against the pending claims herein.

**(iii). Response to Rejection based on Tinkelenberg et al Alone**

Tinkelenberg et al defines a catalyzed melamine-urea-formaldehyde (MUF) resin a  $F/NH_2$  molar ratio of 0.25 – 0.625 which is equivalent to a ratio  $F/(NH_2)_2$  of 0.50 - 1.25). The catalyst of Tinkelenberg et al comprises a mixture of latent catalyst and a strong acid in an effective amount. Furthermore it is defined in claim 2 of Tinkelenberg that a sufficient amount of strong acid is to be used for completing the pressing process at 180°C within 10 seconds per mm sheet thickness. This amount of strong acid is shown in example III to be 7.5 wt.% of 4N HCl solution apart from the 1.5 wt.% dry  $NH_4Cl$  latent catalyst, both percentages calculated on the basis of dry adhesive. The catalyst amount in Tinkelenberg et al is needed for an adhesive system which does not contain MDI as second component.

However, as noted in the accompanying Factual Declaration of Karel F.H. Bonekamp ("the Bonekamp Declaration"), the pH range for the system disclosed by Tinkelenberg et al is completely different from that claimed in the present application, i.e., a pH in the range of 7 to 5.5. As a result, an ordinarily skilled person would not be led to the presently claimed compositions based on Tinkelenberg et al alone.

**(iv). Response to Rejection based on Tinkelenberg et al and Wagner**

Combining Wagner with Tinkelenberg et al would likewise be inappropriate. In this regard, as noted previously, Wagner merely discloses that aminoplast resins may be catalyzed by formic acid and acetic acid. Thus, combining Wagner with

Tinkelenberg et al would not provide for an adhesive composition having the properties as defined in pending claim 1.

**(v). Response to Rejection based on Tinkelenberg et al and Ford et al**

Tinkelenberg et al and Ford et al do not teach or suggest adhesive compositions as defined in pending claims 1-5. Specifically, Tinkelenberg et al do not teach the presence of at most 6 wt.% of an ammonium salt as a catalyst nor compositions having the pH values as defined in applicant's pending claims. Thus, even if an ordinarily skilled person might glean the equivalency of organic amine salts and ammonium salts from Ford et al, the combination with Tinkelenberg et al would not result in the presently claimed invention.

**(vi). Conclusions**

All pending claims are patentably unobvious over the applied references of record. Withdrawal of the rejections advanced under 35 USC §103(a) is therefore in order.

van BENTHEM et al  
Serial No. 10/565,963  
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**4. Fee Authorization**

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140.

Respectfully submitted,

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